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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/926,561	11/19/2001	Toshio Morigaki	011536	8736

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EXAMINER

HAMILTON, CYNTHIA

ART UNIT	PAPER NUMBER
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1752

DATE MAILED: 07/08/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/926,561

Applicant(s)

MORIGAKI ET AL.

Examiner

Cynthia Hamilton

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 December 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

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DETAILED ACTION

1. The examiner notes for the record that this application is filed under 35 USC 371.

Because of this lack of unity rules apply with respect to US restriction practice. The examiner had no reason to restrict the claims before examination began because there was no art of record showing the special technical feature was known in the art. Thus, all claims 1-17 have been examined.

2. The examiner notes the following from MPEP 2173.05(p):

A product-by-process claim, which is a product claim that defines the claimed product in terms of the process by which it is made, is proper. In re Luck, 476 F.2d 650, 177 USPQ 523 (CCPA 1973); In re Pilkington, 411 F.2d 1345, 162 USPQ 145 (CCPA 1969); In re Steppan, 394 F.2d 1013, 156 USPQ 143 (CCPA 1967). A claim to a device, apparatus, manufacture, or composition of matter may contain a reference to the process in which it is intended to be used without being objectionable under 35 U.S.C. 112, second paragraph, so long as it is clear that the claim is directed to the product and not the process.

Claims 7-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. With respect to instant claims 7-9, the examiner holds that the claims are not clearly product by process claims. Claims 7-9 are not clearly drawn to products because of the "which is used " language. Thus, what is being claimed is unclear. Because the examiner cannot determine if products or uses are claimed the following rejections are also made.

3. Claim 7 provides for the use of a photosensitive resin composition for manufacturing a screen printing stencil, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim

is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claim 7 is rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

4. Claim 8 is provides for the use of a photoresist ink for manufacturing a printed wiring board, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claim 8 is rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

5. Claim 9 provides for the use of a photoetching resist ink, a plating resist ink or a solder resist ink, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it

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merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claim 9 is rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

6. Claim 14 provides for the method for producing a printed wiring board but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claim 14 is rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

7. Claims 1-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 1, line is found "A photosensitive resin composition of an aqueous emulsion type..." The use of "type" after a definite term, i.e. "aqueous emulsion" without clear definition as to what besides "aqueous emulsion" is meant by the addition of "type" leaves

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unclear what the boundaries of the instant claims are. The addition of the word "type" to an otherwise definite expression (e.g., Friedel-Crafts catalyst) extends the scope of the expression so as to render it indefinite. Ex parte Copenhaver, 109 USPQ 118 (Bd. App. 1955). Are the compositions not aqueous emulsions at all? Instant (A) is required to be obtained from an aqueous polymer emulsion but there is no requirement that it remain an aqueous emulsion. An example would be using an emulsion to make the photosensitive water-insoluble polymer via an aqueous emulsion then dry the result and emulsify it in a non aqueous media. Thus, this could be considered an "aqueous emulsion type" without being an aqueous emulsion.

PRIOR ART REJECTIONS

8. Claims 1-2, 7-10, and 12-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Higuchi (JP 54-135526 as evidenced by English translation PTO 03-3597). If instant component (A) and (B) are both the n-alkylol(meth)acrylamide derivative, then the compositions, processes and used anticipate those of instant claims 1-2, 7-10, and 12-14 wherein in Higuchi in Practical Example 1, poly (vinyl alc.) is the water soluble polymer with a hydroxyl group and poly (vinyl acetate) emulsion is the water insoluble polymer with water. Benzoin me ether is the photopolymerization initiator.

9. Claims 1-2, 7-10, and 12-14 rejected under 35 U.S.C. 103(a) as being unpatentable over Higuchi (JP 54-135526 as evidenced by English translation PTO 03-3597) in view of Balfour et al (EP 0 249 306) and Plambeck (2,791,504). As stated in the preceeding rejection, If instant component (A) and (B) are both the n-alkylol(meth)acrylamide derivative, then the compositions, processes and used anticipate those of instant claims 1-2, 7-10, and 12-14 wherein

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in Higuchi in Practical Example 1, poly (vinyl alc.) is the water soluble polymer with a hydroxyl group and poly (vinyl acetate) emulsion is the water insoluble polymer with water. Benzoin ether is the photopolymerization initiator. However, if (B) is considered a separate component different than (A), then Higuchi makes no comment about adding such a component. However, the use of such added monomers is known in the screen printing art for systems wherein both the polymeric binder is ethylenically unsaturated and there is an added ethylenically unsaturated low molecular weight unsaturated molecule capable of vinyl polymerization. Such a system is taught by Balfour et al. Balfour et al varies from the instant invention in that there is no water insoluble polymer in the emulsion reacted with N-alkylol(meth)acrylamide. Balfour teaches in the first column on page 2 that "To increase the efficiency of the reaction, it is very desirable that the high molecular weight water-soluble polymer should contain available unsaturated groups, capable of participating in the polymerization reaction. When such groups are available, during the reaction the polymer chains themselves crosslink, the molecular weight rises very rapidly and the efficiency of the photoreaction is greatly increased." This idea that crosslinking via vinyl groups with polymers present in a photocurable composition is old as evidenced by Plambeck in col. 6, lines 51-69. Plambeck discloses

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layer, which can be liquid or solid, including gas, in the mixture. The preferred monomers are the ethylenically-unsaturated, addition-polymerizable monomers, particularly those wherein the said ethylenic linkages are terminal, i. e., those monomers having the characteristic $\text{CH}_2=\text{C}<$ group, i. e., the vinylidene monomers. Because of the greater speed with which such compositions polymerize to rigid materials, it is preferred that the photopolymerizable layer contain appreciable proportions of ethylenically-unsaturated polymerizable materials containing a plurality of said polymerizable linkages per molecule. These types of monomers are conventionally referred to as cross-linking agents. This cross-linking facility can be incorporated in the photopolymerizable layer through the use of polymers containing the indicated plurality of polymerizable unsaturated linkages in which instance such materials serve a dual function of both increasing the viscosity of the photopolymerizable layer to the desired level and making available the desired cross-linking facility for the photopolymerization.

Thus, the combination of low molecular weight vinyl group crosslinking materials with the compositions of Higuchi to cause the polymerization reaction to rise rapidly and increase the efficiency of the photoreaction by increasing the proportions of ethylenically-unsaturated polymerizable materials per molecule present as taught by Plambeck and Balfour et al would have been prima facie obvious.

10. Claims 1-2, 7-10, 12-14 and 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Balfour et al (EP 0 249 306) in view of Higuchi (JP 54-135526 as evidenced by English translation PTO 03-3597). With respect to instant claims 1-2, 7-10, 12-14 and 18-19, Balfour et al teach all of the instant invention with the exception of instant (A). Balfour et al does teach reacting polyvinyl alcohol in the form of a suspension in a non-solvent with N-methylolacrylamide to replace hydroxyl groups on the polyvinyl alcohol with ether-linked unsaturated groups. Higuchi on page 3 of PTO 03-3597 discloses the same method but states that there is some problem with the water resistance of the cured plated because of the great

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concentrations of the vinyl alcohol skeleton. To improve the water resistance of this type of ether-linked system, Higuchi teach using a latex obtained by polymerizing a monomer having a hydroxyl group and mix it with a latex obtained from a monomer without any hydroxyl group, i.e. form a polymer that is not water soluble such as those from copolymerization of styrene, (meth) acrylonitrile, vinyl acetate, vinyl chloride etc. This water-dispersible polymer latex of mixed polymers is then reacted with the N-methylolacrylamide and used to obtain a composition with superior water resistance when cured. With respect to instant claims 1-2, 7-10, 12-14 and 18-19, the addition of the insoluble polymer, i.e. to form the latex of Higuchi, to the compositions of Balfour et al would have been prima facie obvious to obtain final products with greater water resistance. Balfour et al in the first column on page 2 teach the formation of printing plates, resists for plating or etching in the preparation of printed circuit boards and in the manufacture of UV-curable inks and varnishes. In PTO 03-3597 also see the examples. In Balfour et al see col. 2, and examples.

11. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Higuchi (JP 54-135526 as evidenced by English translation PTO 03-3597) as applied to claims 1-2 above, and further in view of Reichel et al (3,853,561). As set forth above the compositions of Higuchi et al anticipate those of instant claims 1-2. Higuchi et al also discloses his compositions used in processes of making printing screens but only the method of imaging around the screen as in instant claim 10 are disclosed. However, Reichel et al teach in col. 1, that in the screen printing art there are two different processes for producing the screens. One is the direct as disclosed in Higuchi and the other is the indirect method wherein the material is imaged first then transferred to the screen. With respect to instant claim 11, the use of the indirect method of forming a

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screen stencil with the composition of Higuchi would have been prima facie obvious for the reasons set forth in Reichel et al in col. 1, i.e. the sharpness of the edges of the image areas are not dependent upon the size of the meshes of the fabric.

12. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Higuchi (JP 54-135526 as evidenced by English translation PTO 03-3597) in view of Balfour et al (EP 0 249 306) and Plambeck (2,791,504) as applied to claims 1-2 above, and further in view of Reichel et al (3,853,561). With respect to instant claims 1-2, the combination of low molecular weight vinyl group crosslinking materials with the compositions of Higuchi to cause the polymerization reaction to rise rapidly and increase the efficiency of the photoreaction by increasing the proportions of ethylenically-unsaturated polymerizable materials per molecule present as taught by Plambeck and Balfour et al would have been prima facie obvious. Higuchi et al also discloses his compositions used in processes of making printing screens but only the method of imaging around the screen as in instant claim 10 are disclosed. However, Reichel et al teach in col. 1, that in the screen printing art there are two different processes for producing the screens. One is the direct as disclosed in Higuchi and the other is the indirect method wherein the material is imaged first then transferred to the screen. With respect to instant claim 11, the use of the indirect method of forming a screen stencil with the composition of Higuchi would have been prima facie obvious for the reasons set forth in Reichel et al in col. 1, i.e. the sharpness of the edges of the image areas are not dependent upon the size of the meshes of the fabric. Morigaki et al (EP 0942328a1 and US 6238841b1) teach all of the instant invention with the exception of the water insoluble polymer in instant A. Morigaki et al (132:315842 or Derwent-ACC-No: 2000-370923, or JP02000122281A as they translate JP 2000-122281 A into

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English) teach mixing polymers to form a water based photoresist ink but there is no disclosure as to forming an aqueous emulsion. No translation is available for this document as a whole.

STATUTES

1. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

13. The following is a quotation of parts of 35 U.S.C. 102 that may be relevant to rejections in this action. Take note that (e) is cited twice and varies as stated below the second (e):

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(c) he has abandoned the invention.

(d) the invention was first patented or caused to be patented, or was the subject of an inventor's certificate, by the applicant or his legal representatives or assigns in a foreign country prior to the date of the application for patent in this country on an application for patent or inventor's certificate filed more than twelve months before the filing of the application in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

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(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

(f) he did not himself invent the subject matter sought to be patented.

(g)(1) during the course of an interference conducted under section 135 or section 291, another inventor involved therein establishes, to the extent permitted in section 104, that before such person's invention thereof the invention was made by such other inventor and not abandoned, suppressed, or concealed, or (2) before such person's invention thereof, the invention was made in this country by another inventor who had not abandoned, suppressed, or concealed it. In determining priority of invention under this subsection, there shall be considered not only the respective dates of conception and reduction to practice of the invention, but also the reasonable diligence of one who was first to conceive and last to reduce to practice, from a time prior to conception by the other.

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Primary Examiner Cynthia Hamilton whose telephone number is (703) 308-3626. The examiner can normally be reached on Monday-Friday, 9:30 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Janet Baxter can be reached on (703) 308-2303. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application should be directed to the 1700 receptionist whose telephone number is (703) 308-0661.

Cynthia Hamilton
June 28, 2003



CYNTHIA HAMILTON
PRIMARY EXAMINER